



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification<sup>3</sup> :</b>  <b>A23K 1/18, A23L 1/04</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 85/ 05014</b>  <b>(43) International Publication Date:</b> 21 November 1985 (21.11.85)
<b>(21) International Application Number:</b> PCT/US85/00766 <b>(22) International Filing Date:</b> 25 April 1985 (25.04.85)  <b>(31) Priority Application Number:</b> 606,062 <b>(32) Priority Date:</b> 1 May 1984 (01.05.84) <b>(33) Priority Country:</b> US  <b>(71)(72) Applicant and Inventor:</b> COX, James, P. [US/US]; 246 East Bartlett Road, Lynden, WA 98264 (US).  <b>(74) Agent:</b> BROWN, Ward; Beach & Brown, 3107 Eastlake Avenue East, Seattle, WA 98102 (US).  <b>(81) Designated States:</b> AT, AT (European patent), AU, BB, BE (European patent), BG, BR, CF (OAPI patent), CG (OAPI patent), CH, CH (European patent), CM (OAPI patent), DE, DE (European patent), DK, FI, FR (European patent), GA (OAPI patent), GB, GB		(European patent), HU, IT (European patent), JP, KP, KR, LK, LU, LU (European patent), MC, MG, ML (OAPI patent), MR (OAPI patent), MW, NL, NL (Euro- pean patent), NO, RO, SD, SE, SE (European patent), SN (OAPI patent), SU, TD (OAPI patent), TG (OAPI patent).  <b>Published</b> <i>With international search report.</i>
<b>(54) Title:</b> ATTRACTANT-DISSEMINATING FISH BAIT  <b>(57) Abstract</b>  Fish bait in the form of pellets or a mass has a somewhat rubbery putty-like surface which serves as a vehicle for attractant and dye and will slough off to disseminate the attractant and dye. The somewhat rubbery putty-like consistency can be produced by the interaction of a thickener such as an alginate or guar gum with a reactant such as borax.		

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## Description

## Attractant-Disseminating Fish Bait

## Technical Field

5 This invention relates to fish bait and particularly to fish bait which will disseminate attractant over an extended period of time.

## Background Art

10 Breuer U.S. patent No. 2,827,376, issued March 18, 1958, discloses a soft gelatin casing containing oil and breadcrumbs to provide a readily hookable mass that might diffuse oil as an attractant upon being punctured. It appears that attractant oil would not be released if the bait mass were simply placed in a bait container without being perforated.

15 Ora U.S. patent No. 3,579,895, issued May 25, 1971, discloses a lure made of fused resin incorporating fish attractant which constitutes a plasticizer for the resin. Probably such a lure would be quite expensive, would not be immediately degradable and there would  
20 probably be insufficient attractant to be of much practical value.

Hardin U.S. patent No. 3,854,234, issued December 17, 1974, discloses fish bait having a doughball type filler in a plastisol jacket. Such bait  
25 would probably be prohibitively expensive and it is questionable whether there would be an effective release of attractant.

Cox U.S. patent No. 4,362,748, issued December 7, 1982, discloses fish bait incorporating  
30 alginate in conjunction with metal ion setting agents, preservatives and preservative neutralizing agents having attractants incorporated in the alginate-metal complex, but such attractants are not released sufficiently readily to provide an effective commercial bait.

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## Disclosure of the Invention

In accordance with the present invention, fish bait is provided in the form of a somewhat rubbery putty-like or doughy mass, or in the form of pellets coated with such rubbery putty-like material, which material serves as a vehicle for attractant and dye. Material of putty-like or doughy consistency of the bait or pellet coating can be produced by the interaction of a thickener such as an alginate or guar gum and a reactant such as borax, or guar gum as a thickener and gum tragacanth as a reactant, or by the use of pectin as a thickener which may be plasticized with propylene glycol. The thickener serves as a vehicle for attractant which may be selected from land animal oil, marine oil, proteins, carbohydrates, amines, amino acids and aldehydes. If the attractant and vehicle material is utilized in the form of a coating for pellets, the pellets can be formed of fish meal or any conventional vegetable or animal waste material molded or extruded to form pellets, preferably from 1/4 inch (6 mm) to 1 inch (2.5 cm) in diameter, which usually are of spherical shape although they may be cylindrical or cubical.

The fish bait becomes slimy when in contact with water and slowly dissipates or sloughs attractant-containing material which will be dispersed or diffused over a wide area for an extended period of time. The characteristics of the fish bait can be established easily to provide the desired attractant-disseminating capabilities. The fish bait has ingredients of types which will insure a long shelf life prior to the bait being subjected to the action of water and can be produced economically, utilizing principally waste materials. It is also versatile and capable of being used in different types of fishing equipment for attracting different types of marine animals and which can be supplied in a variety of forms. The bait can disseminate dye, as well as attractant, to enable the

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area in which the attractant is dispersed or diffused to be identified.

#### Best Mode for Carrying Out the Invention

The fish bait of the present invention includes at least three principal components, namely, a vehicle for attractant, attractant and preservative. In addition dye may be used. The fish bait may also include substantially inert extender and may include a pellet core. Some of the attractant ingredients of the bait may function in more than one of such components.

The vehicle is principally responsible for establishing the consistency of the bait or the bait coating and provides a body or coating of somewhat rubbery putty-like or doughy consistency. Such consistency of the vehicle can be obtained by the reaction of alginate, such as sodium alginate or potassium alginate, as a thickener with borax, or by the reaction of guar gum as a thickener with borax, or by the reaction of guar gum as a thickener with gum tragacanth, or by pectin plasticized with propylene glycol. The borax or propylene glycol also has preservative attributes for the attractant and thickener.

The alginate, if of heavy viscosity, i.e. from 800 to 1,000 centipoises, could be used within the range of 1/2 percent to 3 percent by weight, preferably 1 percent, of the bait, excluding any preformed pellets, or if the alginate is of low viscosity, i.e. 62 to 100 centipoises, the quantity used could be 1 percent to 5 percent by weight, preferably 2 percent, of the bait material excluding preformed pellet material. The guar gum could be within the range of 1 percent to 5 percent by weight, preferably 2 percent, of the bait material excluding preformed pellet material.

For bait material not used as coating, the borax content could be 2 percent to 6 percent by weight of the bait material, preferably 3 percent; whereas if

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the bait material is used as a coating for preformed pellets, the quantity of borax in the coating should be 5 percent to 10 percent, preferably 7 percent, of the coating material. If borax is used as a material for  
5 reacting with alginate and/or guar gum, the environment must be alkaline for the reaction to occur.

If gum tragacanth is used instead of borax with guar gum, the weight of gum tragacanth and of guar gum should be approximately equal.

10 If pectin is used as the thickening material to provide the proper consistency for the attractant vehicle and borax is not used, preservatives that may be used as alternatives to borax are hydrochloric acid, HCl, sulfuric acid,  $H_2SO_4$ , nitric acid,  $HNO_3$ , acetic  
15 acid,  $CH_3COOH$ , propionic acid,  $HC=CCOOH$ , formaldehyde,  $HCHO$ , or other aldehyde such as vanillin,  $CH_3O(OH)C_6H_3CHO$ , acetaldehyde,  $CH_3CHO$ , anisaldehyde,  $CH_3OC_6H_4CHO$ , or butyraldehyde,  $C_3H_7CHO$ .

The attractant can be land animal oil or fat,  
20 marine oil or fat, aldehyde, amine or amino acid, protein or carbohydrate.

It is preferred that an amine such as morpholine  $O(CH_2CH_2)_2NH$  be used as an attractant, although other suitable amines such as trimethylamine  
25  $(CH_3)_3N$  or dimethylamine  $(CH_3)_2NH$  could be used. Other attractants which could be used are aldehyde, such as vanillin, acetaldehyde, anisaldehyde or butyraldehyde which would serve both as attractant and as  
preservative. The amount of such attractant would be  
30 within the range of 0 percent to 6 percent by weight, preferably 1 percent, of the bait excluding preformed pellet material.

Marine oil that can be used as an attractant includes herring oil, shrimp oil, menhaden oil and  
35 anchovy oil. Land animal oil or fat or marine oil or fat could be used within the range of 0 percent to 15 percent by weight, preferably 4 percent, of the bait excluding preformed pellet material.

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Attractant or extender may be fish meal, corn meal, alfalfa, chicken waste slurry, seafood process waste such as shrimp process waste, which is principally shell, or clam-processing waste. Such material preferably is used within the range of 5 percent to 60 percent by weight of the bait excluding pellet material.

If the vehicle and attractant material is to be used for coating pellets, it is preferred that the pellets have just sufficient moisture to provide adequate cohesion, which would probably be within the range of 20 to 35 percent by weight of the pellet material. The pellet material could be fish meal and/or grain meal.

The vehicle and attractant material could be applied as coating to the pellets in a single layer or in several successive layers. Where alginate or guar gum is used as the thickening agent, borax could be mixed with the coating material and, after each coating has been applied, powdered borax could be dusted onto the coating to provide a dry, powdery surface prior to use of the bait material.

Dye that could be used preferably would be fluorescent and preferably would be yellow, such as fluorescein dye,  $C_{20}H_{12}O_5$ . The amount of dye used could be 0.1 percent to 5 percent by weight of the bait excluding preformed pellet material, preferably 2 percent.

A specific example of rubbery putty-like bait material can include:

## Example 1

	<u>Weight</u>
high viscosity sodium alginate	1.0 %
water	82.0 %
shrimp process waste	7.0 %
morpholine	1.0 %
marine oil	4.0 %
borax	3.0 %
dye	<u>2.0 %</u>
Total	100.0 %

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Such material may be placed in bait containers or chum holders. Dispersion of the dye will indicate the area over which the attractant has been disseminated. Such dye should be released slowly, such as over a period up to 8 hours.

A bait having consistency of dough that could be used for crab bait, for example, is:

## Example 2

		<u>Weight</u>
10	low viscosity sodium alginate	2.0 %
	water	40.0 %
	clam processing waste	15.0 %
	fish meal	10.0 %
	corn meal	10.0 %
15	alfalfa	10.0 %
	chicken waste slurry	10.0 %
	borax	3.0 %

The water and algin are mixed and when the mixture has thickened the clam-processing waste is added. The dry ingredients are then mixed in a ribbon mixer and the thickener, water and alginate, and clam-processing waste are mixed with the dry ingredients in the mixer. When the mixture has become substantially homogeneous, the borax and chicken waste slurry are added to the mixer separately but simultaneously and mixed in.

For coating pellets preformed by being pressed in a mold or extruded that may be made of fish meal and/or vegetable meal, the coating material may be composed of:

## Example 3

		<u>Weight</u>
	water	10.0 %
	low viscosity sodium alginate	2.0 %
	fish oil	5.0 %
35	homogenized herring	15.0 %
	mixed amines	1.0 %
	borax	2.0 %

The water and alginate are mixed together and when this



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mixture has thickened the fish oil, homogenized herring and mixed amines are mixed in. This material is then applied to the surface of the preformed pellets and powdered borax is sprinkled onto the coating to set the coating. Several layers of such coating can be applied successively to the preformed pellets if desired.

When subjected to the action of water, the surface of such bait material, whether homogeneous throughout the pellet or only constituting the coating, becomes slimy and will slough off, gradually dissipating attractant for dispersion or diffusion throughout an extended period such as from 8 hours to 10 days.

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## Claims

1. Fish bait comprising material including a vehicle and attractant carried thereby and having a somewhat rubbery putty-like or doughy surface which will be affected by water to become slimy and slough off gradually thereby disseminating attractant.
2. The fish bait defined in claim 1, in which the bait is a somewhat rubbery putty-like or doughy mass.
3. The fish bait defined in claim 1, in which the bait includes preformed pellets having somewhat rubbery putty-like surface coating.
4. The fish bait defined in claim 1, in which the bait disseminates attractant over an extended period of time.
5. The fish bait defined in claim 1, in which the attractant is selected from the group consisting of animal oil, marine oil, aldehyde, amine, amino acid, protein and carbohydrate.
6. The fish bait defined in claim 1, in which the surface portion of the bait contains thickener selected from the group consisting of alginate and guar gum reacted with borax.
7. The fish bait defined in claim 1, in which the surface portion of the bait contains guar gum reacted with material selected from the group consisting of borax and gum tragacanth.
8. The fish bait defined in claim 1, in which the surface portion of the bait contains pectin.

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9. The fish bait defined in claim 1, in which the surface portion of the bait contains amine or amino acid as an attractant.

5 10. The fish bait defined in claim 9, in which the surface portion of the bait contains amine as an attractant selected from the group consisting of morpholine, trimethylamine and dimethylamine.

10 11. The fish bait defined in claim 1, in which the surface portion of the bait contains aldehyde as an attractant.

12. The fish bait defined in claim 11, in which the surface portion of the bait contains as an attractant aldehyde selected from the group consisting of vanillin, acetaldehyde, anisaldehyde and butyraldehyde.

15 13. The fish bait defined in claim 1, in which the surface portion of the bait contains marine oil as an attractant.

20 14. The fish bait defined in claim 13, in which the marine oil is selected from the group consisting of herring oil, shrimp oil, menhayden oil and anchovy oil.

25 15. The fish bait defined in claim 1, in which the surface portion of the bait contains pectin as a thickener and preservative selected from the group consisting of hydrochloric acid, sulfuric acid, nitric acid, acetic acid, proprionic acid, formaldehyde, vanillin, acetaldehyde, anisaldehyde and butyraldehyde.

16. The fish bait defined in claim 1, in which the surface portion includes alginate, water, shrimp process waste, morpholine, marine oil and borax.

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17. The fish bait defined in claim 1, in which the surface portion includes alginate, water, clam-processing waste, fish meal, corn meal, alfalfa, chicken waste slurry and borax.

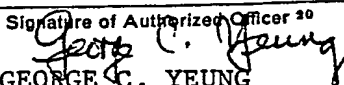
5 18. The fish bait defined in claim 1, in which the surface portion includes dye that can be dissipated.

19. The fish bait defined in claim 18, in which the dye is fluorescent yellow dye.

10 20. The fish bait defined in claim 19, in which the dye is yellow fluorescein.

# INTERNATIONAL SEARCH REPORT

International Application No PCT/US85/00766

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate all) <sup>3</sup>		
According to International Patent Classification (IPC) or to both National Classification and IPC		
INT. CL. <sup>3</sup> A23K 1/18; A23L 1/04		
U.S. CL. 426/1, 573, 805		
<b>II. FIELDS SEARCHED</b>		
Minimum Documentation Searched <sup>4</sup>		
Classification System	Classification Symbols	
U.S.	426/1, 573, 577, 805	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched <sup>5</sup>		
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT</b> <sup>14</sup>		
Category <sup>6</sup>	Citation of Document, <sup>16</sup> with indication, where appropriate, of the relevant passages <sup>17</sup>	Relevant to Claim No. <sup>18</sup>
X	U.S. A, 2,874,048 PUBLISHED 17 FEBRUARY 1959, WALLDOV	1,2,4,5,13,14,18
Y	U.S. A, 2,827,376 PUBLISHED 18 MARCH 1958, BREUER	3
Y	U.S. A, 3,421,899 PUBLISHED 14 JANUARY 1969, HUMPHREYS	6-12, 15-17
Y	U.S. A, 2,932,572 PUBLISHED 12 APRIL 1960, SARICH	19, 20
Y	U.S. A, 4,251,547 PUBLISHED 17 FEBRUARY 1981, LIGGETT	19, 20
A	U.S. A, 3,579,895 PUBLISHED 25 MAY 1971, ORN et al	1-20
A	U.S. A, 3,854,234 PUBLISHED 17 DECEMBER 1974, HARDIN	1-20
A	U.S. A, 4,362,748 PUBLISHED 07 DECEMBER 1982, COX	1-20
<p><b>* Special categories of cited documents: <sup>15</sup></b></p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&amp;" document member of the same patent family</p>		
<b>IV. CERTIFICATION</b>		
Date of the Actual Completion of the International Search <sup>1</sup>	Date of Mailing of this International Search Report <sup>2</sup>	
21 MAY 1985	30 MAY 1985	
International Searching Authority <sup>1</sup>	Signature of Authorized Officer <sup>20</sup>	
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